

Listing of Claims:

Claim 1 (Currently Amended): A process for desulfurization of a gasoline feedstock obtained from ~~at least one of a fluidized-bed catalytic cracking (FCC), steam cracking, coking, or visbreaking operations~~ operation comprising at least the following stages:

- a) a selective hydrogenation of diolefins present in said initial hydrocarbon feedstock in the presence of a catalyst comprising a metal of group VIII of the periodic table, in the presence of an amount of hydrogen that slightly exceeds the stoichiometric value necessary for hydrogenating all of said diolefins,
- b) an extraction by a suitable solvent of resultant hydrogenated fraction under conditions so as to obtain at least two fractions:
 - a raffinate comprising for the most part olefins, paraffins and naphthenes and a reduced amount of sulfur-containing compounds that are contained in the initial feedstock,
 - a fraction that contains said solvent and the majority of aromatic hydrocarbons and the majority of the sulfur-containing compounds contained in the initial feedstock.

Claim 2 (Previously Presented): A process according to claim 1, in which the molar ratio between the hydrogen and the diolefins in stage a) is between 1 and 10.

Claim 3 (Previously Presented): A process according to claim 1, in which said group VIII catalyst comprises at least one metal selected from the group that consists of platinum, palladium, and nickel.

Claim 4 (Previously Presented): A process according to claim 3, in which said catalyst also comprises at least one metal of group VIB of the periodic table, thereby providing a bimetallic catalyst.

Claim 5 (Previously Presented): A process according to claim 1, further comprising distilling said fraction containing solvent, aromatics and sulfur-containing compounds so as to obtain regenerated solvent which is recycled to the extraction step and a bottom stream rich in sulfur-containing compounds and aromatics, and subjecting said bottoms stream to hydrodesulfurization to recover a gasoline low in sulfur and rich in aromatics.

Claim 6 (Previously Presented): A process according to claim 1, in which said selective hydrogenation conducted under a pressure of about 0.4 to 5 MPa, at a temperature of between about 50 and 300°C, with an hourly volumetric flow rate of the feedstock of between about 1 h⁻¹ and 12 h⁻¹.

Claim 7 (Previously Presented): A process according to claim 1, in which said extraction is with a solvent is at least one of an extractive distillation and a liquid-liquid extraction.

Claim 8 (Previously Presented): A process according to claim 1, in which said solvent is a compound or a mixture of compounds selected from the group that consists of the following compounds: sulfolane, 3-methylsulfolane, 2,4-dimethylsulfolane, 3-methylsulfolane, 3-ethylsulfolane, N-methyl pyrrolidone, 2-pyrrolidone, N-ethyl-pyrrolidone, N-propyl-pyrrolidone, N-formyl-morpholine, dimethylsulfone, diethylsulfone, methylethylsulfone, dipropylsulfone, dibutylsulfone, tetraethylene glycol, triethylene glycol, dimethylene glycol, ethylene glycol, ethylene carbonate, and propylene carbonate.

Claim 9 (cancelled)

Claim 10 (Previously Presented): A process according to claim 1, wherein the hydrocarbon feedstock is a gasoline with a upper boiling point of less than 220°C.

Claim 11 (Cancelled)

Claim 12 (Previously Presented): A process according to claim 7, wherein the extraction is conducted by extractive distillation, the hydrocarbon feedstock is an FCC gasoline and the solvent comprises at least one of sulfolane, 3-methylsulfolane, N-formyl morpholine, 2-pyrrolidone, dipropylsulfone and tetraethylene glycol.

Claim 13 (Previously Presented): A process according to claim 4, wherein the gasoline is from said FCC stage.

Claim 14 (Previously Presented): A process according to claim 12, further comprising distilling said fraction containing solvent, aromatics and sulfur-containing compounds so as to obtain regenerated solvent which is recycled to the extraction step and a bottom stream rich in sulfur-containing compounds and aromatics, and subjecting said bottoms stream to hydrodesulfurization to recover a gasoline low in sulfur and rich in aromatics.

Claim 15 (Previously Presented): A process according to claim 1, in which the molar ratio between the hydrogen and the diolefins in stage a) is between 1.2 and 5.

Claim 16 (Currently Amended): A process according to claim 5, wherein ~~the gasoline feedstock consists essentially of an FCC gasoline and~~ the bottoms stream comprises 60-90% by weight of aromatics.

Claim 17 (Previously Presented): A process according to claim 1, wherein said catalyst consists essentially of a nickel-containing catalyst.

Claim 18 (Previously Presented): A process according to claim 16, wherein said catalyst consists essentially of a nickel-containing catalyst.

Claim 19 (Previously Presented): A process according to claim 1, wherein said extraction in step (b) of claim 1 is conducted by extractive distillation.

Claim 20 (Previously Presented): A process according to claim 16, wherein the extraction in step (b) is conducted by extractive distillation and the solvent comprises at least one of sulfolane, 3-methylsulfolane, N-formyl morpholine, 2-pyrrolidone, dipropylsulfone and tetraethylene glycol.

Claim 21 (Previously Presented): A process according to claim 20, wherein the solvent is sulfolane.

Claim 22 (Previously Presented): A process according to claim 1, wherein the resultant hydrogenated fraction from step (a) is passed directly into the extraction stage (b).

Claim 23 (Currently Amended): A process according to ~~claim 11~~ claim 1, wherein the FCC gasoline feedstock is passed directly into the hydrogenation stage.